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Chen et al.

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(54) **WATER-RESPONSIVE MATERIALS AND USES THEREFOR**

(71) Applicant: **Research Foundation of the City University of New York**, New York, NY (US)

(72) Inventors: **Xi Chen**, New York, NY (US); **Zhi-Lun Liu**, New York, NY (US); **Mir Ahnaf Hussain**, New York, NY (US); **Zane Shatz**, New York, NY (US)

(73) Assignee: **Research Foundation of the City University of New York**, New York, NY (US)

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(58) **Field of Classification Search**

CPC C08L 1/02; C09J 105/00; C08B 37/006; F03G 7/06; F03G 7/065

See application file for complete search history.

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Primary Examiner — Jesse S Bogue
(74) *Attorney, Agent, or Firm* — Peter J. Mikesell; Schmeiser, Olsen & Watts, LLP

(57) **ABSTRACT**

A rotary engine that generates electricity using differences in relative humidity. A water-responsive material expands and contracts as water evaporates which drives the rotation of two wheels. The rotary motion drives an electrical generator which produces electricity. In another embodiment, the water-responsive material is used to actuate an artificial muscle of a robotic device.

12 Claims, 16 Drawing Sheets